ABSTRACT

An industrial robot that has uses a simulated force vector to allow a work piece held by the robot end effector to be mated with a work piece whose location and orientation is not precisely known to the robot. When the end effector makes contact with the location and orientation in which the other work piece is held the robot provides a velocity command to minimize the force of the contact and also provides a search pattern in all directions and orientations to cause the end effector to bring the work piece it is holding in contact with the other work piece. The search pattern and the velocity command are continued until the two work pieces mate.